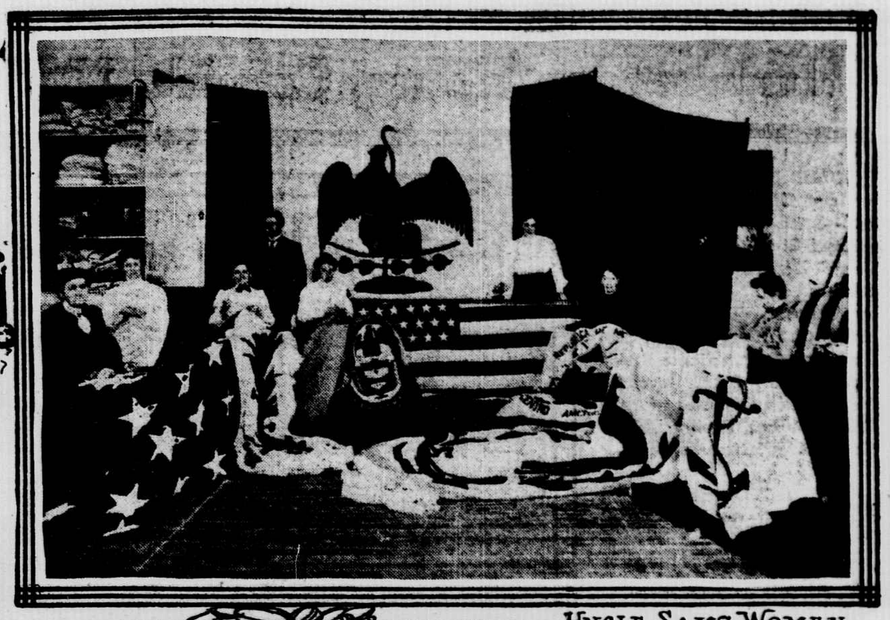
MAIDS OF ALL TRADES

WOMEN Have Taken Up All Sorts of Work During Last Few Years—Their Old Fashioned Occupations. Woman Scientists, Physicians and Engineers—One Young Woman Holds Position as Stewardess of Dining Car on a Middle Western Railroad. Keepers of Lighthouses Have Dangerous Jobs—A Woman Steeplejack Took Up Work of Her Father and Has Been Successful.

MISS CARRIE BENTON, FIRST WOMAN TO HAVE CHARGE OF A DINING CAR.



UNCLE SAMS WOMEN FLAG MAKERS.

NOT the least curious part of the story of the curious occupations of women are the results obtained from the survey of the conditions, in general, of women's work during the past century. All women before the opening of the nineteenth century had either to superintend or to take actual share themselves, according to their station in life, in such industries as the making of soap, starch, beer, homespun linen and clothing, wax and tallow candles, and the other necessaries of housekeeping.

The principal work for women of that time outside of the home consisted of spinning, sewing and house and field labor. But we need not wait for the woman bosses of the twentieth century, for here is one as early as this in our national history: "My company killed a yearling whale and made twenty-seven barrels of oil," says Mme. Martha Smith in January of the year 1707.

Today there are heroines of the sea without number. Miss Laura A. Hecox has for thirty years tended the great beacon of Santa Cruz in the Pacific ocean. Another lighthouse keeper of the Pacific is Mrs. E. A. Fish of Point Pinos, who but recently received a gold star from the government in recognition of her services. One would not expect such a dangerous place as Robbins reef to have its light kept by a woman, but that is where Miss Kate Walker is stationed.

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In 1827 nine-tenths of the working female population was employed in the factories, of which the most important were the cotton manufactories. It was not until 1870 that the government first thought the importance of women in trades sufficient to warrant putting them into the census report under the separate heading of "Females." The comparison of these statistics with those collected in 1900, the beginning of the twentieth century, reveals some very curious and interesting facts, not only regarding the change and progress of woman labor, but also showing the kinds of work then being done by the "weaker sex."

The following incident is fairly typical of the general American attitude a short time ago toward the question of woman's ability to compete with man. A certain longshore fisherman and his wife had frequent quarrels which it was plain the woman usually started. During one of these the man, finding himself unable to hold his ground in the wordy war, set about using physical force to back up his side. "Oh! Oh! Tom!" cried his weeping wife, "You ought to remember that woman is the 'weaker vessel!'"

"Confound it, woman," replied Tom, taking up the scriptural phrase in a sense more appropriate to his own daily experience, "if you are a 'weak vessel' and want anybody to use you like one, you mustn't begin by carrying such an infernal crowd of sail!"

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A glance at some of the occupations given in the 1870 census report shows the "weaker vessel" engaging in trades which no man need scorn. What about such light feminine employments as coopering, saw and planing mill work, charcoal, coke and lime burners, whitewashers, printers and pressmen, gunsmiths, locksmiths and bellhangers? And yet in 1870 women were doing all these things and many others, too. There were boot and shoe makers, harness and saddle makers, leather curriers and tanners; there were bottlers and soda water makers, brewers and malsters, distillers and rectifiers; and although there were not very many of them then, there are a great many more at the present day.

But all the trades have not increased in the number of women working in them. For instance, although there were 712 cabinet makers in 1870, in 1900 there were only sixty-seven. And again, in 1870, 391 females wielded the whitewash brush, made famous by Tom Sawyer, while in 1900 only sixty-five were engaged in that pleasant occupation.

Several employments not in existence as far as women were concerned in 1870 were flourishing thirty years later. Of these, the most noteworthy are tin plate makers, rag carpet makers, engineers and firemen (not locomotive), model and pattern makers and well borers. The largest class of all, outside of factory hands and seamstresses of various kinds, was that of the boot and shoe makers and repairers.

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At this point it would be appropriate to mention a few of the inventions patented by women early in the century and up to the first census report in 1870. The majority of these patents, as was natural, had reference to women's clothing and to household utensils, but there are some that are certainly worthy of the so-called "new women" of today. In 1828 Elizabeth Buckley invented a sheet-iron shovel and in 1840 Sarah Mather took out a patent on a submarine telescope and lamp. Around 1860 we find several odd inventions such as improvements in reaping and mowing machines, boilers and locomotive wheels, and here is even one demure damsel patenting an "Improved war vessel, parts applying to other structures of defense."

During the twenty years between 1870 and 1890 there were patented improvements in car couplings, cigars, rails for street railways, centrifugal sugar machines, lifeboats, apparatus for destroying vegetation on railroads, dump wagons, and, lastly, appears one who is certainly a forerunner of the present flourishing campaign against the death-bearing, germ-laden insect. She is a woman who took out a patent on an improvement in the devices for killing mosquitoes.

The government has many queer kinds of work to offer to its employes, but the woman who has probably the strangest occupation in Washington, or even in the whole of the United States, is Mrs. Amanda E. Brown, who works in the Treasury. She identifies burnt paper money sent in for redemption, and hears countless numbers of hard luck stories about this burnt money. Her work saves thousands of dollars each year for the poor, foolish people who stowed their hoard in the stove for the summer, rather than trust it to a bank, and who often lose their all when the autumn fires are lighted. Also in the Treasury Department is Mrs. W. A. Leonard, chief expert detector of counterfeit money, and she has a wonderful reputation for infallibility.

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The office of "blind reader" in the dead letter office is a position that must call for as much ingenuity and skill as are required in the solving of the most complicated of the modern puzzles. Mrs. Patti Lyle Collins deciphers "blind" directions on letters in a way that seems sometimes to smack of clairvoyance.

To Miss Carrie Benton of Cincinnati belongs the unique distinction of being the first woman placed in charge of a dining car on any railway in the world. Miss Benton is employed as stewardess in the dining car department of the Cincinnati, Hamilton and Dayton railway, and makes the round trip between Cincinnati and Dayton. She entered the employ of the dining car service April 26, 1910, in the station restaurant at Cincinnati. After gaining a knowledge of the culinary art, Miss Benton made her first run April 24, 1911. The innovation of placing a woman on a dining car was watched with interest by passenger officials of the leading American railways, but the success of the experiment was recognized from the outset. It became a topic of general comment in railroad circles.

Several weeks ago an experienced traveler—a man who has dined in the fashionable cafes on Broadway and 5th avenue and has perched on the high stools of lunch counters in rural towns where the "s" on the restaurant sign is invariably printed in inverted fashion—lounged in the Pullman smoking compartment of the northbound express of the C., H. & D. The train had just left Hamilton and the group of chance acquaintances in the smoking room was discussing the presidential campaign, the relative merits of the candidates as well as the possible outcome of the three-cornered race.

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It was noontime and the conversation was hardly under way when a young woman entered the car and made the announcement that "Luncheon is served; the dining car is forward." Fumes of clear Havana permeated the atmosphere, and cigars were shifted as a look of surprise was expressed.

"Well, I never," said the staid traveler. "We must be on the original suffragette route!" Then a passenger vouchsafed the information that Miss Benton is the only woman filling such a position on the railways, and the group sauntered in to appease their appetites. In the dining car Miss Benton directed the attention of her guests to the special dishes on the menu. They were impressed with the way the meal was handled, the man from Broadway and his fellow diners agreeing that the service was all that could have been wished.

On the trip from Cincinnati to Dayton and return Miss Benton serves on an average one guest each four minutes during meal hours. She makes the round trip of 118 miles each day, and since assuming charge of the dining car has traveled approximately 70,000 miles. The experience of the young woman in handling the traveling public has been novel. She has had numerous offers of positions in hotels, cafes and offices, but has preferred to remain in railroad service because of the fascination of the work, which she enjoys.

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"I am fond of railroad work on the road," said Miss Benton recently, "and am ambitious to build up the service and patronage whenever possible. My life on the car is extremely interesting, for there is much to be observed about the peculiarities of human nature when one is in contact with the traveling public. There is also a chance to learn much about railway operation and the organization behind the scenes which makes the American train service possible. I feel that my experience has been an education in itself and I couldn't be induced to return to a less active occupation."

Miss Kate Gleason, daughter of the proprietor of an engine works in Rochester, N. Y., is an instance of a woman in a rather unusual line of work. Miss Gleason enjoyed a thorough education in the practice as well as the theory of engineering. She superintended the installation in Europe of several machines built by her father's company, of which she had become a director.

Of course, today the telephone girl is no longer a novelty, but Mrs. Margaret M. Hyatt, who has risen from the lowest position of that kind, is certainly noteworthy. The manager of a telephone exchange is generally a man, but the largest and busiest telephone exchange in Chicago is in charge of Mrs. Hyatt, who makes a very capable and efficient traffic supervisor. An extremely interesting and responsible position is held by Mrs. Harriott G. Daley, who is in charge of the United States Capitol telephone exchange in Washington. Mrs. Daley has a speaking acquaintance with a great many noted men whom she has never seen.

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All the great disasters bring to light numbers of heroes and heroines of the wire, and Mrs. Sheron Nonas is one of the very first to become famous. Mrs. Nonas, after studying telegraphy, enlisted in the United States service and was one of the important civil war operators. She was stationed at Harrisburg at the time of the assassination of President Lincoln and sent through the messages that directed the removal of the President's body to Harrisburg. She was one of the first persons to view the face of the martyred President when he was placed in the capitol there.

Nowadays, when one sees the name Mayor So and So, Judge So and So, etc., one cannot bank on the fact that the holder of the title is a man. For instance, Miss Clara C. Munson was recently elected mayor of Warrenton, Ore., on the citizens' ticket. Miss Munson is not only the first woman who ever held such an office in her state, but is likewise one of the best known lodge women in Oregon.

In Kentucky there is a real woman judge. Mrs. Van Dyke Bell of Covington occupies the position of United States commissioner, which requires her to fill the duties of judge in preliminary hearings. In the realm of finance Miss M. L. Riddle of Austin, Tex., is said to be the only woman banking agent in the states. Miss Riddle is also the editor of the Texas Bankers' Record, has written a digest of the Texas banking laws and is considered an authority on that subject.

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Miss Annie L. Kenny knows all about leases of Indian lands and passes on law points connected with them in an offhand manner, just as the ordinary woman would say, "Half a cup of sugar and one egg; beat well." The business positions occupied by capable and efficient women are too numerous to mention in detail, although many of them are well worth notice. Two very successful advertising managers are Mrs. Ida Clark and Miss Allyne F. Scheerer, both of New York city.

Among the 200 names of the members of the press gallery in Washington there is but a single woman, Mrs. George F. Richards, who represents three New England papers. Mrs. Charles R. Miller of Baltimore probably has the distinction of being the only woman war correspondent. She went to Melilla during the Moroccan war with Spain in 1908, and was actually on the firing line with 40,000 troops. For days and days Mrs. Miller heard the booming of big guns and saw the dead and dying on every side.

Each year we hear of more women who are entering occupations which demand a daring coolness of nerve that is nothing short of marvelous. Mrs. Alice Stebbins Wells of Los Angeles is the pioneer policewoman of America. Her success has led to the appointment of a fairly large number of others all over the United States. Mrs. Isabella Goodwin, who is a bona fide member of the New York police department, was largely responsible for the capture of the principals in the famous twenty-five-thousand-dollar taxicab robbery. Not long ago women were pressed into service to break a painters' strike.

Miss Mayme Pixley of Jeffersonville, Ind., is said to be the only woman steeplejack in this country. Her father followed the same occupation until incapacitated by illness. He was working on a job when he was suddenly taken sick, and his daughter, much against the advice of others, took up the work. The whole town was out to cheer her, and when she finished the task she received an ovation.

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On the Erie railroad there is a section where the laborers are kept hustling by a woman boss, Mrs. Shannon, who at the death of her husband stepped into his—overalls. Report does not say, but whether in skirts or overalls, Mrs. Shannon does her "bossing" as efficiently as any one on the road.

Out in Arizona a woman, with the aid of her daughter, is running three mines and she is not losing anything on the proposition either. Near Wickenburg, also in Arizona, an association of women has been formed to work the gold and copper mines of that district.

Miss Yeomans and Miss Ximena McGlashan, both of California, have butterfly farms in that beautiful country, and sell their delicate wares to museums and private collectors. Miss Yeomans has so improved her business that she runs an international butterfly exchange. At a recent cat show in New York city all but one or two of the sleek, furry pets of the city's four hundred were clients of Miss Virginia Smith, who is the professional cat bather of these aristocratic society felines.

There is one woman whose time is spent, not following out the motto of the "swat the fly" crusade, but on the contrary, in making flies—beautiful little insects for which the enthusiastic sportsman pays good money when the fishing fever is on him and the trout pool lures him from his office in the city. Along a rather similar line, one might almost say, is the work of Evelyn Goesbeeck Mitchell, the author of various entomological articles. She is a representative of modern scientific woman, and the modern scientific woman is of growing importance today. The United States government employs many of these skillful workers to good advantage. For instance, there is Mrs. Mica Zesta Heidemann, who makes enlarged models of insects for the Department of Agriculture.

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A woman who has won fame that will last as long as the statue of Abraham Lincoln in the rotunda of the Capitol is in existence, and that is likely to endure for many generations to come, is Mrs. Vinnie Ream Hoxie of Washington. Her genius as a sculptor was early recognized, and she was commissioned by Congress to make a life-size statue of Lincoln, who sat for his bust in the White House. Later another commission for the statue of Admiral Farragut was given her, and the result now stands in Farragut Square, Washington. She has modeled from life portrait busts or medallions of Gen. George B. McClellan, Thaddeus Stevens, John Sherman, Ezra Cornell, Gen. J. D. Fremont, T. Buchanan Read, Elihu B. Washburn, Horace Greeley and Peter Cooper. Besides these Americans, such prominent foreigners as Cardinal Antonelli, Pere Hyacinthe, Spurgeon, Franz Lisst, Gustave Dore and Kaulbach have all sat for Mrs. Hoxie.

At present there are hundreds of woman doctors and a fair number of surgeons. But how many women have nerves strong enough to do the work in which Miss Diana Blair and a very few other artists, either male or female, are engaged? Miss Blair makes beautiful paintings of surgical operations for the Harvard Medical School. She attends all the operations and sketches the incisions and the various conditions which the surgeons find in their work and with so preserve for future use and reference.

The Navy Department has trained a group of fifty expert needlewomen in the New York navy yard to cut out and finish the varied flags for the American battleships, amounting to some 20,000 in a year. The thousands of white stars used on the flags are cut out by an ingenious machine, especially devised for this purpose, operated by electricity. Only a few years ago the stars were cut out by hand. Now a plunger, fitted with steel knives the shape and size of the star wanted, with a single down stroke cuts out from fifty to one hundred stars at a time. Some eight different sizes of stars are used, each having a special cutting die.

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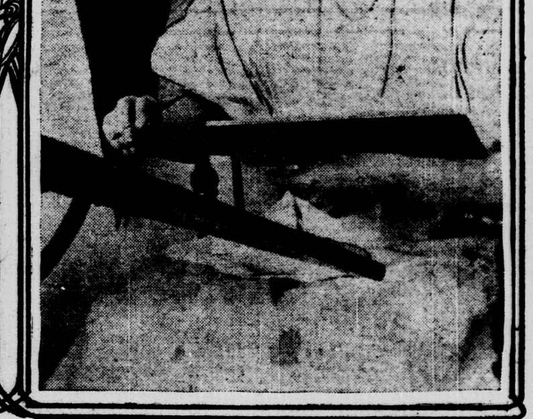
A good idea of the number of flags that must be carried by a large battleship can be gathered from the considerable pile fifteen feet long and almost shoulder high, recently finished and sent aboard the United States battleship Wyoming. The foreign flags are incased in thick paper bags. The name of the country is stenciled on the bottom. The remainder, including the flags for ordinary use, signal sets, the international code, etc., are not wrapped, but tied in round bundles and lettered.

The pile contains 480 different flags, the regulation number every large war vessel of our navy has to carry, the material and making of which cost the government just $2,500 for each ship. It is necessary to equip them for all forms of ceremonial and official occasions, saluting and signaling, both at home and in foreign waters. The largest flag made is the United States ensign No. 1, with forty-eight stars, which is 36 feet long by 19 wide and cost $40 to make. The President's flag requires the longest time of any to complete, as it takes one woman a whole month to finish it.

MRS. MARGARET HYATT, TRAFFIC SUPERVISOR OF A TELEPHONE CO.

MRS. AMANDA E. BROWN, WHO IDENTIFIES MUTILATED CURRENCY



MISS DIANA BLAIR, WHO MAKES SCIENTIFIC DRAWINGS.

NATIONAL ACADEMY OF SCIENCES TO MEET THIS MONTH IN WASHINGTON

IN March, 1863, President Lincoln signed the act that gave existence to the National Academy of Sciences. As it celebrates its semi-centenary anniversary on the third Tuesday of this month in Washington, its history becomes of more than ordinary interest. There is no record of its beginnings, and, as all of the original organizers have died, tradition or conjecture only is left to furnish reasons for its origin. The generally accepted explanation, however, is that during the early years of the civil war the President was beset on all sides by persons having inventions and ideas to exploit that would improve methods of warfare or ameliorate the suffering incidental to the struggle between the states.

Many of these propositions had to do with scientific principles, and these were promptly referred to Alexander Dallas Bache, superintendent of the coast survey; to Joseph Henry, secretary of the Smithsonian Institution, or to James M. Gilliss of the United States Naval Observatory, as well as to other prominent savants in the government in Washington.

Much time was consumed in the preparation of reports on such topics, the greater proportion of which were nationally without value, and in consequence it was felt that a larger body to include representative scientists in other sections of the country should be had, to whom special questions could be referred.

Another explanation has been frequently given. Subsequent to the appointment of Louis Agassiz to a chair on natural science in the Lawrence Scientific School of Harvard University, and largely on his suggestion, there came to the United States a number of teachers of science, such as Arnold Guyot, the geographer; Leo Lesquereux, the paleobotanist, as well as a number of others. Many of these men had been honored by election to foreign academies and felt embarrassed in accepting these distinguished favors, by the fact that there was no academy in the United States from which similar recognition could be bestowed upon worthy foreigners. Moreover, a number of the younger scientists of that time had been educated in Europe. Conspicuous among these was Benjamin A. Gould, who had studied astronomy under the great Gauss in Gottingen, and who was everywhere accepted as one of the ablest of the coming men. To Gould much credit has always been given for the organization of the National Academy.

Doubtless both of these conditions had much to do with the bill that was introduced by Henry Wilson of Massachusetts, and which, after naming the fifty incorporators, recommended that the academy "shall, whenever called upon by any department of the government, investigate, examine, experiment and report upon any subject of science or art."

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The names of the fifty incorporators were selected with exceptional care and included those of the most representative men of science in the United States at that time. The chief of the scientific bureaus in Washington as well as the most promising of their assistants are to be found on the list. From the coast survey there was chosen Supt. Bache and his associates, John H. Alexander, Julius E. Hilgard and Joseph Saxton. The only representative from the Smithsonian Institution was its first secretary, Joseph Henry. The army contributed as its quota the chief of engineers, Gen. G. Barnard, and the following of his associates in that corps: Cols. W. H. C. Bartlett and D. H. Mahan (then at West Point) and A. A. Humphreys and J. G. Totten. The names from the navy were equally distinguished—J. A. Dahlgren, Charles H. Davis and John Rodgers—were well known line officers with scientific predilections, while from the select professional corps J. H. C. Coffin, J. M. Gilliss, J. S. Hubbard and Joseph Winlock were named. The great universities were also well represented.

The first session of the academy was held in New York city, there, April 22, 1863, in response to an invitation issued by Senator Wilson, a majority of the incorporators gathered to organize in the old building of the New York University on Washington Square. Wisely was this historic structure chosen as the first meeting place of this distinguished group of men, for within its walls Morse had worked out the details of his invention of the magnetic telegraph and there, also, in the early days of photography, Draper had made the first human portrait by the sun.

No record besides the prefunctory statement of organization is known to exist, but the sessions continued for three days and at the first of these meetings a committee of nine was appointed to prepare a constitution and by-laws. J. Peter Lesley, in a letter to his wife, writes of one of the sessions that Henry was in the chair and tells how "when it came to the article imposing the fealty oath of the government upon candidates for membership we had a most exciting debate, in which I was compelled to join in three or four speeches, against Leidy, St. Alexander, W. B. Rogers, Newberry and one or two others, while Lee most stirring and thoroughgoing little speeches were made by Agassiz, Bache, Gould and Frazer. After repeated protestations from the copperheads that they were ready to take that or any oath, but unwilling to exclude 'repentant' 'brethren' 'for all time,' 'who had gone through fire,' etc. I urged there were men among (us) who had gone through the same fire and come out pure gold; but those they were providing for had failed to stand the test.

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"This brought Barnard of Mississippi, who had forsaken all and come north, to his feet. He spoke as only the Union men in the south can speak. He assured us there was not a man of science in the south who would not continue to be a rebel, and spit on our diploma. Leidy threatened to resign. When we passed the resolution he asked to be recorded against it. Frazer and I immediately called for the ayes and noes; but afterward it was all hushed up and no record was made, by general consent. Agassiz, like a glorious fellow as he is, led off and gave us courage; Bache, like a cunning old dog, waited until we had all spoken and then came in, like the ironsides, with one of the most thundering broadsides ever fired."

From this beginning the academy has gone on and on, holding at least two meetings each year. The first stated or annual meeting is held the third Tuesday in April, always in Washington, and the others, usually in the late autumn, at some university town in the east, although one meeting at least has been held as far west as Chicago.

Naturally great interest is always manifested in the election of new members, and no greater honor can ever come to an American scientist than to be chosen to the academy. Elections are held only at the stated meeting in Washington and result from a nomination which must be approved by a majority of the members of the committee on the branch of research in which the person nominated is eminent." There are at present eight of these committees, representing the following branches of learning: 1, mathematics and astronomy; 2, physics and engineering; 3, chemistry; 4, geology and paleontology; 5, botany; 6, zoology and animal morphology; 7, physiology and pathology, and 8, anthropology and psychology. If the candidate succeeds in passing the committee his name is placed on the so-called preference ballot and then, in the order of the number of favorable votes received, the name passes to the final vote.

At the time of election the name of the candidate receiving the greatest number of votes on the preference ballot is first condidered, and for admission to the academy he must receive the approval of at least two-thirds of the number present at the session. Nomination may not be solicited and election frequently comes as an entire surprise to the member so fortunate as to be so honored.

As originally incorporated the academy consisted of but fifty members. This restriction was removed by an act of Congress in 1870, and thereafter for a number of years the constitution provided that not more than five members should be chosen each year. This number has more recently been increased to ten, and the present membership is 113. Altogether in the fifty years of its existence there have been 246 members.

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The foreign associate members, limited to fifty in number, require for an election a two-thirds vote. There are at present forty-two foreign associates and the names of seventy-six are on the honor roll of deceased foreign associates.

The question that most naturally arises in connection with any historical account of the academy is to what extent it has sustained its relation to the government. The answer is to be found in the many valuable reports that have been made. At first the questions submitted involved a certain amount of research, and typical of these may be mentioned such practical problems as "on the preservation of paint on army knapsacks," or "on the removal of ink from revenue stamps." A highly interesting subject that was submitted to a committee of chemists was "on the preservation of the writing of the original Declaration of Independence." Every ten years this historical document is examined by a committee of experts appointed by the academy in order to determine what progress, if any, has been made in the disintegregation of the paper on which the Declaration of Independence was written, and to what extent the ink has faded.

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With the development of the scientific bureaus in Washington, notably those connected with the Department of Agriculture and the geological survey, problems involving laboratory research are now sent, in most cases, directly to them. Sometimes questions involving the scientific interests of the various departments have been referred to the academy for consideration. Of such a nature was the one pertaining to the national surveys. Four geological and geographical surveys were in operation west of the Mississippi river, and as the work progressed there arose doubts as to whether or not certain portions of the territories under consideration belonged to this or that survey.

As each survey in its zeal for success felt that the other should yield, a solution of the difficulty became necessary. The matter was referred to the academy and its conclusion in favor of a single survey led in 1879 to the organization of the present United States geological survey. The recommendation of the academy that the United States Naval Observatory be placed under the direction of a civilian chief, although indorsed by the Secretary of the Navy, has always failed to receive the approval of Congress. The conservation of the natural resources of the United States has frequently been made the subject of report.

As recent as 1908 the academy urged that the government acquire such forest lands of the southern Appalachian mountains and the White mountains "as are necessary to protect the navigable streams which have their sources therein." In response to a request from President Roosevelt the academy made a report on the "conduct of scientific work under the United States government." The lack of a rational correlation of allied branches of scientific work was pointed out, and the recommendation made was that a permanent board be appointed to meet at regular intervals for the consideration of all questions of the inauguration, the continuance and the interrelations of the various branches of governmental scientific work. This report was duly referred to Congress by the President, but so far no definite action has been taken on it.

One of the very important functions that the academy has undertaken is the correlation of science, broadly speaking, between the United States and other countries. Thus there is a committee on international co-operation in research whose duties are to keep in touch with the work of the International Association of Academies, to consider plans for co-operation in research, and to recommend the initiation of such co-operative investigations as may seem desirable. An interesting illustration of the last-named feature is found in the committee on solar research.

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In 1904, through the initiation of the academy, there was organized an International Union for Co-operation on Solar Research. The influence of this union has brought about the establishment of a new system of wave lengths based on Michelson's determination of the absolute wave length of the green cadmium line. The daily photographing of the sun with spectroheliographs at stations in Europe, the United States, Mexico and India, noting the changing phenomena of the solar atmosphere, hour by hour, is another important result accomplished by the union. There is also a committee of the academy that has in hand the consideration of the international correlation of paleontology.

The academy has been remarkably fortunate in its financial matters. An annual assessment has always been levied upon the members, but the small amount collected would scarcely more than suffice for the current expenses. According to the latest reports of the treasurer, the academy has a capital of over two hundred thousand dollars. Most of this large amount has been received as bequests from members who have desired that investigations shall continue after their deaths on the special branch in which they were particularly interested and therefore made provision for the creation of funds which should serve the double purpose of advancing the science in which the donor was associated and at the same time of honoring his memory. These special funds include that founded by A. D. Bache for researches in physical and natural science, amounting to $52,886; that founded by J. C. Watson of $25,000, for the promotion of astronomical research; that founded by J. Lawrence Smith for the investigation of meteoric bodies, amounting to $10,000; that founded by Benjamin A. Gould of $20,000, for researches in astronomy; that founded by Wolcott Gibbs for chemical research, amounting to $2,673; the fund of $10,000 established by C. B. Comstock for researches in electricity, magnetism and radiant energy, and a fund, $1,250, for promoting original research on the natural sciences, by O. C. Marsh. In addition to these, Alexander Agassiz left to the academy $50,000 for the general uses of the academy, and there is the Joseph Henry fund of $40,000, having for its purpose the assisting of meritorious investigators, especially in the direction of original research, which, however, becomes available only on the death of the daughter of Prof. Henry.

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The annual reports of the academy record the bare fact of the allotment of a certain sum of money from the fund to the successful applicant, and it would be interesting to trace the advancement of science in this country due to these grants. The names are many and the subjects numerous. An examination of the names of the fortunate recipients of these funds would seem to indicate that no surer method of approach to admission to the academy exists than through the wise employment of such grants.

Besides the grants given for the prosecution of scientific research, there are funds that provide medals to be awarded periodically in recognition of some distinct achievement in science. The J. C. Watson medal for astronomical ability has been given to B. A. Gould in 1887, and to S. C. Chandler in 1894, both recipients being members of the academy, while E. Schonfeld in 1889, A. Auwers in 1891 and Sir David Gill in 1899 are foreign scientists who have been honored with this award. The Henry Draper medal is given, not oftener than once in two years, for original investigation in astronomical physics. Those who have received this medal in the United States include Langley (1886), Pickering (1888), Rowland (1890), Keeler (1899), Hale (1904) and Abbot (1910), and H. K. Vogel (1893), and Sir William Huggins (1901) are the foreign recipients. The J. Lawrence Smith medal for complete investigations on meteoric bodies has been awarded but once, and then to H. A. Newton of Yale College for his studies on the orbits of meteors. The Barnard medal for meritorious services to science is given by Columbia University to those deemed worthy on recommendation of the academy. Four awards have been made, as follows: Lord Rayleigh (1895), W. C Rontgen (1900), Henri Becquerel (1905) and Ernest Rutherford (1910). In 1911 the academy received a fund of $6,000 from Sir John Murray for the purpose of founding an Alexander Agassiz gold medal for original contributions to oceanography.

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The publications of the National Academy are included essentially in two series. One, in quarto form, consists of important memoirs that have been contributed to the advancement of science by the members or those that contain the results of work accomplished in consequence of grants received. Ten complete volumes have already been issued, and parts of later volumes have also been published. Besides the foregoing there are six complete volumes of biographical memoirs containing sketches of deceased academicians that have been written by sympathetic members who were appointed by the president for that purpose. Each year a slender pamphlet rehearsing the principal events in the history of the academy is submitted to Congress as an annual report. A rule has recently been adopted requiring that those who receive medals from the academy shall be invited to present an address describing their investigations, but whether these summaries shall be issued in a new series of publications has not yet been decided.

To adequately describe the merits of the many eminent scientists whose work has gained for them election to the academy would require much space, for even a simple enumeration of their names with a designation of the specialty of each would occupy many pages. It is therefore quite enough to say that the names of the foremost representatives of the various sciences in the United States during the last fifty years are inscribed on its roll of members.

The first president of the academy was Alexander Dallas Bache, who held that high office from the time of its organization until his death, when he was succeded by Joseph Henry, who in turn was followed by William B. Rogers. The fourth president was Othniel C. Marsh, after whom came Wolcott Gibbs, the last survivor of the original members, and he yielded the office to Alexander Agassiz. The present incumbent is Ira Remsen, head of the department of chemistry in the Johns Hopkins University, and for a time also president of that institution.